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CLMSPTO 09/708,475

1. (Five times amended) A compound of the formula:

$$(Y)_{p} = (CH_{2})_{n}O = (R)_{m}$$

wherein,

X is -O-, -S-, -NH-,
$$[-N(R_2)]$$
 or -N- R_2 ;

 R_2 is selected from the group consisting of lower alkyl, aryl lower alkyl, aryl, (C_3-C_{10}) cycloalkyl, aroyl, (C_2-C_{11}) alkanoyl, and phenylsulfonyl groups;

aryl is as defined hereinafter;

p is 1 or 2;

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Y is hydrogen, lower alkyl, hydroxy, chlorine, fluorine, bromine, iodine, lower alkoxy, trifluoromethyl, nitro, or amino, when p is 1;

Y is lower alkoxy when p is 2 and X is -O-:

 $[R_1 \text{ is } R_{20}, R_{21} \text{ or } R_{22}, \text{ wherein:}$

 R_{20} is -(CH₂)_n- where] n is 2, 3, 4, or 5;

 $[R_{21}]$ is

 $-CH_2-CH=CH-CH_2-$

 $-CH_2-C \equiv C-CH_2-$

 $-CH_2-CH=CH-CH_2-CH_2$,

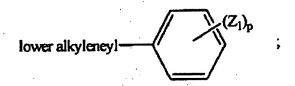
 $-CH_2-CH_2-CH=CH-CH_2-$

-CH₂-C≡C-CH₂-CH₂-, or

 $-CH_2-CH_2-C = C-CH_2$,

the -CH=CH- bond being cis or trans;

 R_{22} is R_{20} or R_{21} in which one or more carbon atoms of R_{20} or R_{21} are substituted by at least one C_1 - C_6 linear alkyl group, phenyl group, or



where Z₁ is lower alkyl, -OH, lower alkoxy, -CF₃, -NO₂, -NH₂ or halogen, p is as previously defined;]

R is hydrogen, lower alkyl, lower alkoxy, hydroxyl, carboxyl, chlorine, fluorine, bromine, iodine, amino, lower mono or dialkylamino, nitro, lower alkyl thio, trifluoromethoxy, cyano, acylamino, trifluoromethyl, trifluoroacetyl, aminocarbonyl, [monoalkylaminocarbonyl, dialkylaminocarbonyl, formyl,]

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where in R₅ is hydrogen, lower alkyl, lower alkoxy, hydroxy, chlorine, fluorine, bromine, iodine, lower monoalkylamino, [lower dialkylamino,] nitro, cyano, trifluoromethyl, or trifluoromethoxy;

heteroaryl is

$$Q_3$$
 is -O-, -S-, -NH-, or -CH=N-;

[W is CH₂ or CHR₈ or N-R₉;]

 R_7 is hydrogen, lower alkyl, or [alkanoyl] <u>lower alkyl-(C=O)-</u>;

[R₈ is lower alkyl;

R₉ is hydroxy, alkoxy, or -NHR₁₀; and

R₁₀ is hydrogen, lower alkyl, C₁-C₃ acyl, aryl,

-C(=O)-aryl or -C(=O)-heteroaryl,

where aryl and heteroaryl are as defined above;]

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and

m is 1, 2, or 3;

with the exclusion of compounds wherein X is O or S, Y is hydrogen, and R is hydrogen, [C₁ = 14 C₄] C₁-C₄ alkyl, chlorine, fluorine, bromine, iodine, cyano, C₁ - C₄ alkoxy, or -COOR₂₃ where R₂₃ is H or C₁ - C₄ alkyl; with the exclusion of compounds wherein X is -S-, [R₁ is R₂₀,] R is H, and m=1; [all geometric, optical, and stereoisomers thereof,] or a pharmaceutically acceptable acid addition salt thereof.

- 2. (Amended) A compound as claimed in claim 1, wherein X is -O-, -S-, or -NH-.
- 3. A compound as claimed in claim 1, wherein Y is hydrogen, chlorine, bromine, or fluorine.
- 4. A compound as claimed in claim 1, wherein n is 2, 3,

o or 4.

- S. A compound as claimed in claim 1, wherein X is
- 6. A compound as claimed in claim 1. wherein X is -S-.
- 7. A compound as claimed in claim 1, wherein X is -NH-.
 - 8. A compound as claimed in claim 1. wherein X is

| --N---R2

9. (Amended Three Times) A compound as claimed in claim 1, wherein X is -O-, -S-, or -NH-; Y is H, Cl, F, or -CF₃; R is selected from the group consisting of hydrogen, C₁-C₃ alkyl, C₁-C₃ alkoxy, -OH, Cl, F, Br, I, [acyl,] C₁-C₃ monoalkylamino, acylamino, [-NO₂-,] -NO₂, -OCF₃, and -CF₃; and n is 2, 3, or 4.

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10. A compound as claimed in claim 9, wherein the substituent Y is in the 5- or 6-position.

11. A compound as claimed in claim 10, wherein m is 2.

- 12. A compound as claimed in claim 10, wherein n is 3.

 13. A compound as claimed in claim 10, wherein p is 1.
- 14. A compound as claimed in claim 1, which is 1-[4-[3-[4-(1H-indazol-3-yl)-1-piperazinyl]propoxy]-3-methoxyphenyl]ethanone or a pharmaceutically acceptable 35 acid addition salt thereof.

15. A compound as claimed in claim 1, which is 1-[4-[4-(1H-indazol-3-yl)-1-piperazinyl]butoxy]-3-methoxyphenyl]ethanone fumarate or a pharmaceutically acceptable acid addition salt thereof.

16. A compound as claimed in claim 1, which is 1-[4-[3-[4-(6-fluoro-1H-indazol-3-yl)-1-piperazinyl]propoxy]-3-methoxyphenyl]ethanone or a pharmaceutically acceptable

acid addition salt thereof.

- 17. (Amended) A compound as claimed in claim 1, which is 1-[4-[4-[4-(6-fluoro-1H-indazol-3-yl)-1-piperazinyl]butoxy]-3-methoxyphenyl]ethanone or a pharmaceutically acceptable acid addition salt thereof.
- 18. (Amended) A compound as claimed in claim 1, which is 1-[4-[3-[4-(6-chloro-1H-indazol-3-yl)-1-piperazinyl]propoxy]-3-methoxyphenyl]ethanone or a pharmaceutically acceptable acid addition salt thereof.
- 19. A compound as claimed in claim 1, which is 1-[4-[4-[4-(1.2-benzisothiazol-3-yl]-1-plperazinyl]butoxy]-3-methoxyphenyl]ethanone or a pharmaceutically acceptable acid addition salt thereof.

20. A compound as claimed in claim 1, which is 1-[4-[3-[4-(1-benzoyl-6-fluoro-1H-indazol-3-yl)-1-piperazinyl]-propoxyl-3-methoxyphenyl]ethanone sesquifumarate or a pharmaceutically acceptable acid addition salt thereof.

- 21. A compound as claimed in claim 1, which is 1-[4-[4-[4-(6-chloro-1H-indazoi-3-yl)-1-piperazinyl]butoxy]-3-methoxyphenyl]ethanone or a pharmaceutically acceptable acid addition salt thereof.
- 22. A compound as claimed in claim 1, which is 1-[4-[3-65 [4-(1.2-benzisothiazol-3-yl)-1-piperazinyl]propoxy]-3-methoxyphenyl]ethanone hemifumarate or a pharmaceutically acceptable acid addition salt thereof.

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- 23. A compound as claimed in claim 1, which is 1-[4-[2-[4-(1.2-benzisothiazoi-3-yl)-1-piperazinyl]ethoxy]-3-methoxyphenyl]ethanone or a pharmaceutically acceptable acid addition sait thereof.
- 24. A compound as claimed in claim 1, which is 1-[4-[2-[4-(6-chloro-1H-indazol-3-yl)-1-piperazinyl]ethoxy]-3-methoxyphenyl]ethanone or a pharmacoutically acceptable acid addition salt thereof.

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25. (Amended four times) A compound of the formula:

$$(Y)_{p} = (CH_{2})_{n}O = (CH_{2})_{n}O$$

wherein X is $-O_{-}$, $-S_{-}$, $-NH_{-}$, or $[-N_{-}R_{2}] - N_{-}R_{2}$;

p is 1 or 2;

Y is hydrogen, Cl, Br, or F when p is 1;

Y is lower alkoxy [or halogen] when p is 2 and X is -O-;

 R_2 is selected from the group consisting of lower alkyl, aryl lower alkyl, aryl,

 (C_3-C_{10}) cycloalkyl, aroyl, (C_2-C_{11}) alkanoyl, and [phenyl sulfonyl]

phenylsulfonyl groups;

aryl is phenyl or

$$R_5$$
:

wherein R₅ is hydrogen, lower alkyl, lower alkoxy, hydroxy, chlorine, fluorine, bromine, iodine,

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lower monoalkylamino, [lower dialkylamino,] nitro, cyano, trifluoromethyl, or trifluoromethoxy;

n is 2, 3, or 4;

R is hydrogen, C₁-C₃ alkyl, C₁-C₃ alkoxy, hydroxyl, [acyl, (C₂-C₁₁) alkanoyl,] Cl, F, Br, I, amino, C₁-C₃ mono- or dialkylamino, acylamino, -NO₂, -OCF₃, -CF₃, -C(=O)-alkyl, or -CH(OR₇)-alkyl;

alkyl is lower alkyl;

R₇ is hydrogen, lower alkyl, or acyl; and

m is 1, 2, or 3;

with the exclusion of compounds wherein X is -O- or -S-, Y is hydrogen, and R is hydrogen, C₁-C₃ alkyl, chlorine, fluorine, bromine, iodine, or C₁-C₃ alkoxy; with the exclusion of compounds wherein X is -S-, R is H, and m=1; or a pharmaceutically acceptable acid addition salt thereof.

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26. (Twice Amended) A compound of the formula:

wherein X is -O-;

p is 1 or 2;

Y is hydrogen, hydroxy, Cl, Br, or F, when p is 1;

Y is lower alkoxy[, hydroxy, or halogen] when p is 2;

n is 2, 3, or 4;

R is hydrogen, C₁-C₃ alkyl, C₁-C₃ alkoxy, hydroxyl, [acyl, (C₂-C₁₁) alkanoyl,] Cl, F, Br,

I, amino, C₁-C₃ mono- or dialkylamino, acylamino, -NO₂, -OCF₃, -CF₃,

-C(=O)-alkyl, or -CH(OR7)-alkyl[,];

alkyl is lower alkyl;

R7 is hydrogen, lower alkyl, or acyl; and

m is 1, 2, or 3;

with the exclusion of compounds wherein Y is hydrogen, and R is hydrogen, C1-C3 alkyl,

chlorine, fluorine, bromine, iodine, or C1-C3 alkoxy;

or a pharmaceutically acceptable acid addition salt thereof.

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27. (Amended four times) A compound of the formula:

wherein X is -S-;

p is 1 [or 2];

Y is hydrogen, Cl, Br, or F[, when p is 1];

[Y is lower alkoxy or halogen when p is 2;]

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n is 2, 3, or 4;

R is hydrogen, C₁-C₃ alkyl, C₁-C₃ alkoxy, hydroxyl, [acyl, (C₂-C₁₁) alkanoyl,] Cl, F,

Br, I, amino, C₁-C₃ mono- or dialkylamino, acylamino, -NO₂, -OCF₃, -CF₃,

-C(=O)-alkyl, or -CH(OR₇)-alkyl[,];

alkyl is lower alkyl;

R7 is hydrogen, lower alkyl, or acyl; and

m is 1, 2, or 3;

with the exclusion of compounds wherein Y is hydrogen and R is hydrogen, C1-C3

alkyl, chlorine, fluorine, bromine, iodine, or C1-C3 alkoxy;

with the exclusion of compounds wherein R is H, and m=1;

or a pharmaceutically acceptable acid addition salt thereof.

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28. (Twice Amended) A compound of the formula:

wherein X is -NH-;

p is 1 [or 2];

Y is hydrogen, Cl, Br, or F[, when p is 1];

[Y is lower alkoxy or halogen when p is 2;]

n is 2, 3, or 4;

R is hydrogen, C₁-C₃ alkyl, C₁-C₃ alkoxy, hydroxyl, [acyl, (C₂-C₁₁) alkanoyl,] Cl, F, Br,

I, amino, C₁-C₃ mono- or dialkylamino, acylamino, -NO₂, -OCF₃, -CF₃,

-C(=O)-alkyl, or -CH(OR7)-alkyl[,];

alkyl is lower alkyl;

R₇ is hydrogen, lower alkyl, or acyl; and

m is 1, 2, or 3;

or a pharmaceutically acceptable acid addition salt thereof.

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29. (Amended five times) A compound of the formula:

$$(Y)_{p} = \begin{pmatrix} (R)_{m} \\ N - (CH_{2})_{n}O - \end{pmatrix} \end{pmatrix} \end{pmatrix}$$

wherein X is $-N-R_2$;

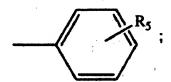
p is 1 [or 2];

Y is hydrogen, Cl, Br, or F[, when p is 1];

[Y is lower alkoxy or halogen when p is 2;]

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R₂ is selected from the group consisting of lower alkyl, aryl lower alkyl, aryl, (C₃-C₁₀) cycloalkyl, aroyl, (C₂-C₁₁) [aroyl,] alkanoyl, and phenylsulfonyl groups; aryl is phenyl or



wherein R₅ is hydrogen, lower alkyl, lower alkoxy,
hydroxy, chlorine, fluorine, bromine, iodine, lower
monoalkylamino, [lower dialkylamino,] nitro,
cyano, trifluoromethyl, or trifluoromethoxy;

n is 2, 3, or 4;

R is hydrogen, C₁-C₃ alkyl, C₁-C₃ alkoxy, hydroxyl, [acyl, (C₂-C₁₁) alkanoyl,] Cl,

F, Br, I, amino, C₁-C₃ mono- or dialkylamino, acylamino, -NO₂, -OCF₃, -CF₃,

-C(=O)-alkyl, or -CH(OR₇)-alkyl[,];

alkyl is lower alkyl; R, is hydrogen, lower alkyl, or acyl; and

m is 1, 2, or 3;

or a pharmaceutically acceptable acid addition salt thereof.

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30. (Amended Five Times) A pharmaceutical composition, which comprises a compound of the formula:

wherein X is -O, -S-, -NH-, or $-N(R_2)$;

 R_2 is selected from the group consisting of lower alkyl, aryl lower alkyl, aryl, (C_3-C_{10}) cycloalkyl, aroyl, (C_2-C_{11}) alkanoyl, and phenylsulfonyl groups;

wherein aryl is as defined hereinafter;

p is 1 or 2;

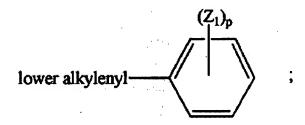
Y is hydrogen, lower alkyl, hydroxy, chlorine, fluorine, bromine, iodine, lower alkoxy, trifluoromethyl, nitro, or amino, when p is 1;

Y is lower alkoxy when p is 2 and X is -O-:

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 $[R_1 \text{ is } R_{20}, R_{21} \text{ or } R_{22}, \text{ wherein:} \\ R_{20} \text{ is } -(CH_2)_n - \text{ where] n is 2, 3, 4, or 5;} \\ [R_{21} \text{ is} \\ -CH_2 - C = CH - CH_2 -, \\ -CH_2 - C = C - CH_2 -, \\ -CH_2 - CH = CH - CH_2 - CH_2, \\ -CH_2 - CH_2 - CH = CH - CH_2 -, \\ -CH_2 - CH_2 - CH_2 - CH_2 -, \text{ or} \\ -CH_2 - CH_2 - C = C - CH_2, \\ \text{the } -CH = CH - \text{ bond being cis or trans;} \\$

R₂₂ iS R₂₀ or R₂₁ in which one or more carbon atoms of R₂₀ or R₂₁ are substituted by at least on C₁-C₆ linear alkyl group, phenyl group, or



where Z₁ is lower alkyl, -OH, lower alkoxy, -CF₃, -NO₂, -NH₂ or halogen, and p as previously defined;]

R is hydrogen, lower alkyl, lower alkoxy, hydroxyl, carboxyl, chlorine, fluorine, bromine, iodine, amino, lower mono or dialkylamino, nitro, lower alkyl thio, trifluoromethoxy, cyano, acylamino, trifluoromethyl, trifluoroacetyl, aminocarbonyl, [monoalkylaminocarbonyl, dialkylaminocarbonyl, formyl,]

-C(=O)-alkyl, -C(=O)-O-alkyl, -C(=O)-aryl, -C(=O)-heteroaryl, or

-CH(OR₂)-alkyl[,]; [-C(=W)-alkyl, -C(=W)-aryl, or

-C(=W)-heteroaryl;]

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alkyl is lower alkyl; aryl is phenyl or

$$R_5$$

where R₅ is hydrogen, lower alkyl, lower alkoxy, hydroxy, chlorine, fluorine, bromine, iodine, lower monoalkylamino, [lower dialkylamino,] nitro, cyano, trifluoromethyl, or trifluoromethoxy;

heteroaryl is

 Q_3 is -O-, -S-, -NH-, or -CH=N-; [W is CH₂ or CHR₈ or N-R₉;] R_7 is hydrogen, lower alkyl, or [(C_2 - C_{11}) alkanoyl] lower alkyl-(C=O)-;

[R₈ is lower alkyl;

 R_9 is hydroxy, alkoxy, or $-NHR_{10}$; and R_{10} is hydrogen, lower alkyl, C_1-C_3 acyl, aryl, -C(=O)-aryl or -C(=O)-heteroaryl, where aryl and heteroaryl are as defined above;] and

m is 1, 2, or 3;

with the exclusion of compounds wherein X is O or S, Y is hydrogen, and R is

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hydrogen, C₁-C₄ alkyl, chlorine, fluorine, bromine, iodine, cyano, C₁-C₄ alkoxy, or -COOR₂₃ where R₂₅ is <u>H or</u> C₁-C₄ alkyl; with the exclusion of compounds wherein X is -S-, [R₁ is R₂₀,] R is H, and m=1; [all geometric, optical, and stereoisomers thereof,] or a pharmaceutically acceptable acid addition salt thereof, and a pharmaceutically acceptable carrier therefor.

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31. (Amended Five Times) An antipsychotic composition, which comprises a compound of the formula:

$$\begin{bmatrix} & & & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & \\ & & & \\ & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & &$$

$$(Y)_p$$
 N
 N
 $(CH_2)_nO$

wherein

X is -O-, -S-, -NH-, or -N(
$$R_2$$
);

 R_2 is selected from the group consisting of lower alkyl, aryl lower alkyl, aryl, (C_3-C_{10}) cycloalkyl, aroyl, (C_2-C_{11}) alkanoyl, and phenylsulfonyl groups; where in aryl is as defined hereinafter;

p is 1 or 2;

Y is hydrogen, lower alkyl, hydroxy, chlorine, fluorine, bromine, iodine, lower alkoxy, trifluoromethyl, nitro, or amino, when p is 1;

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Y is lower alkoxy when p is 2 and X is -O-:

 $[R_1 \text{ is } R_{20}, R_{21} \text{ or } R_{22}, \text{ wherein:}$

 R_{20} is $-(CH_2)_a$ where] n is 2, 3, 4, or 5;

 $[R_{21}]$ is

 $-CH_2-CH=CH-CH_2-$

 $-CH_2-C = C-CH_2-$

 $-CH_2-CH=CH-CH_2-CH_2$,

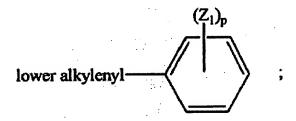
 $-CH_2-CH_2-CH=CH-CH_2-$

 $-CH_2-C \equiv C-CH_2-CH_2-$, or

-CH₂-CH₂-C≡C-CH₂,

the -CH=CH- bond being cis or trans;

 R_{22} is R_{20} or R_{21} in which one or more carbon atoms of R_{20} or R_{21} are substituted by at least on C_1 - C_6 linear alkyl group, phenyl group, or



where Z₁ is lower alkyl, -OH, lower alkoxy, -CF₃, -NO₂, -NH₂ or halogen, a p is as previously defined;]

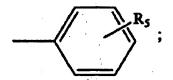
R is hydrogen, lower alkyl, lower alkoxy, hydroxyl, carboxyl, chlorine, fluorine, bromine, iodine, amino, lower mono or dialkylamino, nitro, lower alkyl thio, trifluoromethoxy, cyano, acylamino, trifluoromethyl, trifluoroacetyl, aminocarbonyl, [monoalkylaminocarbonyl, dialkylaminocarbonyl, formyl,] -C(=O)-alkyl, -C(=O)-O-alkyl, -C(=O)-aryl, -C(=O)-heteroaryl, or $-CH(OR_7)-alkyl[,]; [-C(=W)-alkyl, -C(=W)-aryl, or$

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-C(=W)-heteroaryl;]

alkyl is lower alkyl;

aryl is phenyl or



where R₅ is hydrogen, lower alkyl, lower alkoxy, hydroxy, chlorine, fluorine, bromine, iodine, lower monoalkylamino, [lower dialkylamino,] nitro, cyano, trifluoromethyl, or trifluoromethoxy;

heteroaryl is

 Q_3 is -O-, -S-, -NH-, or -CH=N-;

[W is CH₂ or CHR₈ or N-R₉;]

 R_7 is hydrogen, lower alkyl, or $[(C_2-C_{11}) \text{ alkanoyl}]$ lower alkyl-(C=O)-;

[R₈ is lower alkyl;

R₉ is hydroxy, alkoxy, or -NHR₁₀; and

 R_{10} is hydrogen, lower alkyl, C_1 - C_3 acyl, aryl,

-C(=O)-aryl or -C(=O)-heteroaryl,

where aryl and heteroaryl are as defined above;]

and

m is 1, 2, or 3;

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with the exclusion of compounds wherein X is O or S, Y is hydrogen, and R is hydrogen, C_1 - C_4 alkyl, chlorine, fluorine, bromine, iodine, cyano, C_1 - C_4 alkoxy, or -COOR₂₃ where R_{23} is \underline{H} or C_1 - C_4 alkyl;

with the exclusion of compounds wherein X is -S-, [R₁ is R₂₀,] R is H, and m=1; [all geometric, optical, and stereoisomers thereof,] or a pharmaceutically acceptable acid addition salt thereof, in an amount sufficient to produce an antipsychotic effect, and a pharmaceutically acceptable carrier therefor.

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32. (Amended Four Times) A method of treating psychoses, which comprises administering to a mammal a psychoses-treating effective amount of a compound of the formula:

$$\begin{bmatrix} & & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & &$$

$$(Y)_{p} = \underbrace{ \begin{pmatrix} (R)_{m} \\ (CH_{2})_{n}O \end{pmatrix}}_{X}$$

wherein

$$X \text{ is -O-, -S-, -NH-, or -N(R2);}$$

 R_2 is selected from the group consisting of lower alkyl, aryl lower alkyl, aryl, (C_3-C_{10}) cycloalkyl, aroyl, (C_2-C_{11}) alkanoyl, and phenylsulfonyl groups;

where aryl is as defined hereinafter;

p is 1 or 2;

Y is hydrogen, lower alkyl, hydroxy, chlorine, fluorine, bromine, iodine, lower

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alkoxy, trifluoromethyl, nitro, or amino, when p is 1;

Y is lower alkoxy when p is 2 and X is -O-:

 $[R_1 \text{ is } R_{20}, R_{21} \text{ or } R_{22}, \text{ wherein:}]$

 R_{20} is -(CH₂)_n- where] n is 2, 3, 4, or 5;

 $[R_{21}]$ is

 $-CH_2-CH=CH-CH_2-$

-CH,-C≡C-CH,-,

 $-CH_2-CH=CH-CH_2-CH_2$,

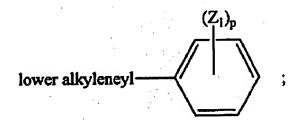
 $-CH_2-CH_2-CH=CH-CH_2-$

 $-CH_2-C \equiv C-CH_2-CH_2-$, or

 $-CH_2-CH_2-C \equiv C-CH_2$,

the -CH=CH- bond being cis or trans;

 R_{22} is R_{20} or R_{21} in which one or more carbon atoms of R_{20} or R_{22} are substituted by at least on C_1 - C_6 linear alkyl group, phenyl group, or



where Z_1 is lower alkyl, -OH, lower alkoxy, -CF₃, -NO₂,

-NH₂ or halogen, and p is as previously defined;]

R is hydrogen, lower alkyl, lower alkoxy, hydroxyl, carboxyl, chlorine, fluorine, bromine, iodine, amino, lower mono or dialkylamino, nitro, lower alkyl thio, trifluoromethoxy, cyano, acylamino, trifluoromethyl, trifluoroacetyl, aminocarbonyl, [monoalkylaminocarbonyl, dialkylaminocarbonyl, formyl,] -C(=O)-alkyl, -C(=O)-O-alkyl, -C(=O)-aryl, -C(=O)-heteroaryl, or

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-CH(OR₇)-alkyl[,]; [-C(=W)-alkyl, -C(=W)-aryl, or -C(=W)-heteroaryl;]

wherein alkyl is lower alkyl; aryl is phenyl or

$$R_5$$
 ,

wherein R₅ is hydrogen, lower alkyl, lower alkoxy, hydroxy, chlorine, fluorine, bromine, iodine, lower monoalkylamino, [lower dialkylamino,] nitro, cyano, trifluoromethyl, or trifluoromethoxy;

heteroaryl is

 Q_3 is -O-, -S-, -NH-, or -CH=N-;

[W is CH2 or CHR8 or N-R9;]

 R_7 is hydrogen, lower alkyl, or $[(C_2-C_{11})$ alkanoyl] lower alkyl-(C=O)-;

[R₈ is lower alkyl;

R₉ is hydroxy, alkoxy, or -NHR₁₀; and

R₁₀ is hydrogen, lower alkyl, C₁-C₃ acyl, aryl,

-C(=O)-aryl or -C(=O)-heteroaryl,

where aryl and heteroaryl are as defined above;]

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and

m is 1, 2, or 3;

with the exclusion of compounds wherein X is O or S, Y is hydrogen, and R is hydrogen, C₁-C₄ alkyl, chlorine, fluorine, bromine, iodine, cyano, C₁-C₄ alkoxy, or -COOR₂₃

wherein R₂₃ is H or C₁-C₄ alkyl;

with the exclusion of compounds wherein X is -S-, [R₁ is R₂₀,] R is H, and m=1; [all geometric, optical, and stereoisomers thereof,] or a pharmaceutically acceptable acid addition salt thereof.

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33. (Amended Four Times) An analgesic composition, which comprises a compound of the formula:

$$\begin{bmatrix} & & & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & \\ & & & \\ &$$

$$(Y)_{p} = \begin{pmatrix} (R)_{m} \\ N - (CH_{2})_{n}O \end{pmatrix}$$

wherein,

X is -O-, -S-, -NH-, or
$$[-N(R_2)] = N(R_2)$$
;

R₂ is selected from the group consisting of lower alkyl, aryl lower alkyl, aryl, (C₃-C₁₀) cycloalkyl, aroyl, (C₂-C₁₁) alkanoyl, and phenylsulfonyl groups;

wherein aryl is as defined hereinafter;

p is 1 or 2;

Y is hydrogen, lower alkyl, hydroxy, chlorine, fluorine, bromine, iodine, lower alkoxy, trifluoromethyl, nitro, or amino, when p is 1:

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Y is lower alkoxy when p is 2 and X is -O-:

 $[R_1 \text{ is } R_{20}, R_{21} \text{ or } R_{22}, \text{ wherein:}$

 R_{20} is -(CH₂)_a- where] n is 2, 3, 4, or 5;

 $[R_2]$ is

 $-CH_2-CH=CH-CH_2-$

 $-CH_2-C=C-CH_2-$

 $-CH_2-CH=CH-CH_2-CH_2$,

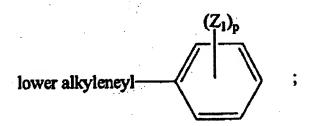
 $-CH_2-CH_2-CH=CH-CH_2-$

 $-CH_2-C \equiv C-CH_2-CH_2-$, or

 $-CH_2-CH_2-C = C-CH_2$

the -CH=CH- bond being cis or trans;

 R_{22} is R_{20} or R_{21} in which one or more carbon atoms of R_{20} or R_{21} are substituted by at least on C_1 - C_6 linear alkyl group, phenyl group, or



where Z₁ is lower alkyl, -OH, lower alkoxy, -CF₃, -NO₂, -NH₂ or halogen, and p is as previously defined;]

R is hydrogen, lower alkyl, lower alkoxy, hydroxyl, carboxyl, chlorine, fluorine, bromine, iodine, amino, lower mono or dialkylamino, nitro, lower alkyl thio, trifluoromethoxy, cyano, acylamino, trifluoromethyl, trifluoroacetyl, aminocarbonyl, [monoalkylaminocarbonyl, dialkylaminocarbonyl, formyl,]

-C(=O)-alkyl, -C(=O)-O-alkyl, -C(=O)-aryl, -C(=O)-heteroaryl, or

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-CH(OR₇)-alkyl[,]; [-C(=W)-alkyl, -C(=W)-aryl, or-C(=W)-heteroaryl;] wherein alkyl is lower alkyl; aryl is phenyl or

$$R_5$$

wherein R, is hydrogen, lower alkyl, lower alkoxy, hydroxy, chlorine, fluorine, bromine, iodine, lower monoalkylamino, [lower dialkylamino,] nitro, cyano, trifluoromethyl, or trifluoromethoxy;

heteroaryl is

$$Q_3$$
 ;

wherein Q₃ is -O-, -S-, -NH-, or -CH=N-;

[W is CH₂ or CHR₈ or N-R₉;]

 R_7 is hydrogen, lower alkyl, or $[(C_2-C_{11})$ alkanoyl] lower alkyl-(C=O)-; $[R_8$ is lower alkyl;

Ro is hydroxy, alkoxy, or -NHR10; and

R₁₀ is hydrogen, lower alkyl, C₁-C₃ acyl, aryl,

-C(=O)-aryl or -C(=O)-heteroaryl,

where aryl and heteroaryl are as defined above;] and

m is 1, 2, or 3;

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with the exclusion of compounds wherein X is O or S, Y is hydrogen, and R is hydrogen, C₁-C₄ alkyl, chlorine, fluorine, bromine, iodine, cyano, C₁-C₄ alkoxy, or -COOR₂₃

wherein R₂₃ is H or C₁-C₄ alkyl;

with the exclusion of compounds wherein X is -S-, [R₁ is R₂₀,] R is H, and m=1; [all geometric, optical, and stereoisomers thereof,] or a pharmaceutically acceptable acid addition salt thereof, in an amount sufficient to produce a pain-relieving effect, and a pharmaceutically acceptable carrier therefor.

- 34. (Amended) A method of alleviating pain, which comprises administering to a mammal a pain-relieving effective amount of a [compound] composition as claimed in claim 33.
- 35. A pharmaceutical composition, which comprises a 10 compound as claimed in claim 1, 25, 26, 27, 28, or 29, and a pharmaceutically acceptable carrier therefor.
- 36. (Amended) An [antispsychotic] antipsychotic composition, which comprises a compound as claimed in claim 1, 25, 26, 27, 28, or 29, in an amount sufficient to produce an antipsychotic effect, and a pharmaceutically acceptable carrier therefor.
- 37. (Amended) A method of treating psychoses, which comprises administering to a mammal a psychoses-treating effective amount of a compound as claimed in claim 1, 25, 26, 27, [29] 28 or 29.

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38. An analgesic composition, which comprises a compound as claimed in claim 1, 25, 26, 27, 28, or 29, in an amount sufficient to produce a pain-relieving effect, and a pharmaceutically acceptable carrier therefor.

39. A method of alleviating pain which comprises administering to a mammal a pain-relieving effective amount of a compound as claimed in claim 1, 25, 26, 27, 28, or 29.

40. An antipsychotic composition, which comprises a compound as claimed in claim 1, in an amount sufficient to produce an antipsychotic effect, and a pharmaceutically acceptable carrier therefor.

41. A method of treating psychoses, which comprises administering to a mammal a psychoses-treating effective

amount of a compound as claimed in claim 1.

42. An analgesic composition, which comprises a compound as claimed in claim 1, in an amount sufficient to produce a pain-relieving effect, and a pharmaceutically acceptable carrier therefor.

43. A method of alleviating pain, which comprises administering to a mammal a pain-relieving effective amount of a

10 compound as claimed in claim 1.

44. The compound of any one of claims 1, 25, 26, 27, 28, and 29, wherein said pharmaceutically acceptable acid addition salt is selected from the group consisting of salts of mineral acids, salts of monobasic carboxylic acids, salts of dibasic carboxylic acids, and salts of tribasic carboxylic acids.

45. The compound of claim 44, wherein said pharmaceutically acceptable acid addition salt is selected from the group consisting of salts of hydrochloric acid, sulfuric acid, nitric acid, acetic acid, propionic acid, maleic acid, fumaric acid, carboxysuccinic acid, and citric acid.

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46. (Amended Twice) A compound of the formula

$$(Y)_{p} - (R_{1}) - O - (R_{1})_{m}$$

wherein

X is $-O_{-}$, $-S_{-}$, $-NH_{-}$, or $-N(R_2)$:

 R_2 is selected from the group consisting of lower alkyl, aryl lower alkyl, aryl, (C_3-C_{10}) cycloalkyl, aroyl, (C_2-C_{11}) alkanoyl, and phenylsulfonyl groups;

aryl is as defined hereinafter:

p is 1 or 2:

Y is hydrogen, lower alkyl, hydroxy, chlorine, fluorine, bromine, iodine, lower alkoxy, trifluoromethyl, nitro, or amino, when p is 1;

Y is lower alkoxy, hydroxy, or halogen when p is 2 and X is -O-:

 (R_1) is

 $-CH_2-CH=CH-CH_2-$

-CH2-C=C-CH2-.

-CH₂-CH=CH-CH₂-CH₂-.

 $-CH_2-CH_2-CH=CH-CH_2-$

-CH₂-C≡C-CH₂-CH₂-. or

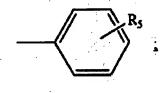
 $-CH_2-CH_2-C=C-CH_2-$

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the -CH=CH- bond being cis or trans:

R is hydrogen, lower alkyl, lower alkoxy, hydroxyl, carboxyl, chlorine, fluorine, bromine, iodine, amino, lower mono or dialkylamino, nitro, lower alkyl thio, trifluoromethoxy, cyano, acylamino, trifluoromethyl, trifluoroacetyl, aminocarbonyl, dialkylaminocarbonyl, formyl, -C(=O)-alkyl, -C(=O)-aryl, -C(=O)-heteroaryl, -CH(OR₇)-alkyl, -C(=W)-alkyl, -C(=W)-aryl, or -C(=W)-heteroaryl;

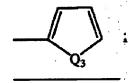
wherein alkyl is lower alkyl; aryl is phenyl or



wherein R, is hydrogen, lower alkyl, lower alkoxy, hydroxy,
chlorine, fluorine, bromine, iodine, lower
monoalkylamino, lower dialkylamino, nitro,
trifluoromethyl, or trifluoromethoxy;

cyano.

heteroaryl is



wherein Q_3 is $-O_-$, $-S_-$, $-NH_-$, or $-CH=N_-$:

W is CH2 or CHR8 or N-R9:

R₇ is hydrogen, lower alkyl, or lower alkyl-(C=O)-;

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R₈ is lower alkyl:

Ro is hydroxy, lower alkoxy, or -NHR10: and

R₁₀ is hydrogen, lower alkyl, C_1 - C_2 acyl, aryl, -C(=O)-aryl, or -C(=O)-heteroaryl.

wherein aryl and heteroaryl are as defined above; and

m is 1, 2, or 3;

with the exclusion of compounds wherein X is O or S. Y is hydrogen, and R is

hydrogen, C₁-C₄ alkyl, chlorine, fluorine, bromine, iodine, cyano, C₁-C₄

alkoxy, or -COOR₂₃

wherein R₂₂ is H or C₁-C₄ alkyl;

all geometric, optical and stereoisomers thereof, or a pharmaceutically acceptable acid addition salt thereof.

- 47. A compound as claimed in claim 46, wherein X is -O-, -S-, or -NH-.
- 48. A compound as claimed in claim 46, wherein Y is hydrogen, chlorine, bromine, or fluorine.

Claim 49 has been cancelled

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- 50, A compound as claimed in claim 46, wherein X is -O-,
- 51. A compound as claimed in claim 46, wherein X is -S-.
- 52. A compound as claimed in claim 46, wherein X is -NH-.
- 53. A compound as claimed in claim 46, wherein X is $-N(R_2)$.
- 54. (Amended Twice) A compound as claimed in claim 46, wherein X is -O-, -S-, or -NH-; Y is H, Cl, F, or -CF₃; R is selected from the group consisting of hydrogen, C₁-C₃ alkyl, C₁-C₃ alkoxy, -OH, Cl, F, Br, I, C₁-C₃ monoalkylamino, acylamino, -NO₂, -OCF₃, and -CF₃.
- 55. A compound as claimed in claim 54, wherein the substituent Y is in the 5- or 6-position.
 - 56. A compound as claimed in claim 55, wherein m is 2.

Claim 57 has been cancelled

58. A compound as claimed in claim 55, wherein p is 1.

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59. A pharmaceutical composition, which comprises a compound as claimed in claim

46, and a pharmaceutically acceptable carrier therefor.

- 60. An antipsychotic composition which comprises a compound as claimed in claim
 46, in an amount sufficient to produce an antipsychotic effect, and a pharmaceutically acceptable carrier therefor.
- 61. A method of treating psychoses, which comprises administering to a mammal a psychoses-treating effective amount of a compound as claimed in claim 46.
- 62. An analgesic composition which comprises a compound as claimed in claim 46. in an amount sufficient to produce a pain-relieving effect, and a pharmaceutically acceptable carrier therefor.
- 63. A method of alleviating pain, which comprises administering to a mammal a pain-relieving effective amount of a compound as claimed in claim 46.
- 64. The compound of claim 46, wherein said pharmaceutically acceptable acid addition salt is selected from the group consisting of salts of mineral acids, salts of monobasic carboxylic acids, salts of dibasic carboxylic acids, and salts of tribasic carboxylic acids.

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addition salt is selected from the group consisting of salts of hydrochloric acid, sulfuric acid,

nitric acid, acetic acid, propionic acid, maleic acid, fumaric acid, carboxysuccinic acid, and citric acid.

66. (Amended Twice) A compound of the formula

wherein

X is $-O_{-}$, $-S_{-}$, $-NH_{-}$, or $-N(R_2)$;

 R_2 is selected from the group consisting of lower alkyl, aryl lower alkyl, aryl, $(C_3 - C_{10})$ cycloalkyl, aroyl, $(C_2 - C_{11})$ alkanoyl, and phenylsulfonyl groups:

aryl is as defined hereinafter:

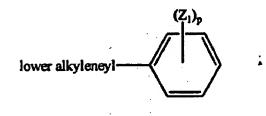
p is 1 or 2:

Y is hydrogen, lower alkyl, hydroxy, chlorine, fluorine, bromine, iodine, lower alkoxy, trifluoromethyl, nitro, or amino, when p is 1:

Y is lower alkoxy, hydroxy, or halogen when p is 2 and X is -O-:

 (R_1) is R_{20} or R_{21} in which one or more carbon atoms of R_{20} or R_{21} are substituted by at least one C_1 - C_6 linear alkyl group, phenyl group or

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wherein Z₁ is lower alkyl, -OH, lower alkoxy, -CF₃, -NO₂, -NH₂ or halogen:

 R_{20} is $-(CH_2)_0$, where n is 2, 3, 4 or 5:

 R_{21} is

 $-CH_2-CH=CH-CH_2-$

 $-CH_2-C = C-CH_2-$

 $-CH_2-CH=CH-CH_2-CH_2-.$

-CH,-CH,-CH=CH-CH,-.

 $-CH_2-C=C-CH_2-CH_2-$, or

 $-CH_2-CH_2-C = C-CH_2-$

the -CH=CH- bond being cis or trans:

R is hydrogen, lower alkyl, lower alkoxy, hydroxyl, carboxyl, chlorine,

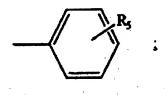
fluorine, bromine, iodine, amino, lower mono or dialkylamino, nitro, lower alkyl thio, trifluoromethoxy, cyano, acylamino, trifluoromethyl, trifluoroacetyl, aminocarbonyl, monoalkylaminocarbonyl.

dialkylaminocarbonyl, formyl, -C(=O)-alkyl, -C(=O)-O-alkyl, -C(=O)-heteroaryl, -C(=O)-alkyl, -C(=W)-alkyl, -C(=W)

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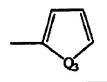
-C(=W)-aryl, or -C(=W)-heteroaryl; wherein alkyl is lower alkyl;

aryl is phenyl or



wherein R₃ is hydrogen, lower alkyl, lower alkoxy, hydroxy, chlorine, fluorine, bromine, iodine, lower monoalkylamino, lower dialkylamino, nitro, cyano, trifluoromethyl, or trifluoromethoxy;

heteroaryl is



wherein Q_3 is -O-, -S-, -NH-, or -CH=N-;

W is CH, or CHR, or N-R,:

R₇ is hydrogen, lower alkyl, or lower alkyl-(C=O)-;

R₈ is lower alkyl:

R₀ is hydroxy, lower alkoxy, or $-NHR_{10}$; and

R₁₀ is hydrogen, lower alkyl, C₁-C₃ acyl, aryl,

-C(=O)-aryl, or -C(=O)-heteroaryl,

wherein aryl and heteroaryl are as defined above; and

m is 1, 2, or 3;

with the exclusion of compounds wherein X is O or S. Y is hydrogen, and R is hydrogen, C₁-C₄ alkyl, chlorine, fluorine, bromine, iodine, cyano, C₁-C₄ alkoxy, or -COOR₂₃

wherein R₂₂ is H or C₁-C₄ alkyl:

with the exclusion of compounds wherein X is -S-, R₁ is R₂₀, R is H, and m=1;
all geometric, optical and stereoisomers thereof, or a pharmaceutically acceptable
acid addition salt thereof.

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SON,

- 67. A compound as claimed in claim 66, wherein X is -O-, -S-, or -NH-.
- 68. A compound as claimed in claim 66, wherein Y is hydrogen, chlorine, bromine, or fluorine.
 - 69. A compound as claimed in claim 66, wherein n is 2, 3, or 4.
 - 70. A compound as claimed in claim 66, wherein X is -O-.
 - 71. A compound as claimed in claim 66, wherein X is -S-.
 - 72. A compound as claimed in claim 66, wherein X is -NH-.
 - 73. A compound as claimed in claim 66, wherein X is -N(R₂).

74. (Amended Twice) A compound as claimed in claim 66, wherein X is -O-, -S-, or -NH-; Y is H, Cl. F, or -CF₃; R is selected from the group consisting of hydrogen, C₁-C₃ alkyl, C₁-C₃ alkoxy, -OH, Cl. F, Br. I, C₁-C₃ monoalkylamino, acylamino, -NO₂, -OCF₃, and -CF₃; and n is 2, 3, or 4.

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- 75. A compound as claimed in claim 74, wherein the substituent Y is in the 5- or 6-position.
 - 76. A compound as claimed in claim 75, wherein m is 2.
 - 77. A compound as claimed in claim 75, wherein n is 3.
 - 78. A compound as claimed in claim 75, wherein p is 1.
- 79. A pharmaceutical composition, which comprises a compound as claimed in claim
 66, and a pharmaceutically acceptable carrier therefor.
- 80. An antipsychotic composition which comprises a compound as claimed in claim

 66, in an amount sufficient to produce an antipsychotic effect, and a pharmaceutically acceptable carrier therefor.
- 81. A method of treating psychoses, which comprises administering to a mammal a psychoses-treating effective amount of a compound as claimed in claim 66.

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82. An analgesic composition which comprises a compound as claimed in claim 66, in an amount sufficient to produce a pain-relieving effect, and a pharmaceutically acceptable carrier therefor.

- 83. A method of alleviating pain, which comprises administering to a mammal a pain-relieving effective amount of a compound as claimed in claim 66.
- 84. The compound of claim 66, wherein said pharmaceutically acceptable acid addition salt is selected from the group consisting of salts of mineral acids, salts of monobasic carboxylic acids, salts of dibasic carboxylic acids, and salts of tribasic carboxylic acids.
- 85. The compound of claim 84, wherein said pharmaceutically acceptable acid addition salt is selected from the group consisting of salts of hydrochloric acid, sulfuric acid, nitric acid, acetic acid, propionic acid, maleic acid, fumaric acid, carboxysuccinic acid, and citric acid.

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86. (Amended) A pharmaceutical composition, which compromises a compound of the formula

$$(Y)_p$$
 $N-(R_1)-O$

wherein

X is -O-, -S-, -NH-, or -N(R₂);

R, is selected from the group consisting of lower alkyl, aryl lower alkyl, aryl, (C,-

C10)cycloalkyl, aroyl, (C,-C11)alkanoyl, and phenylsulfonyl groups;

aryl is defined hereinafter:

p is 1 or 2;

Y is hydrogen, lower alkyl, hydroxy, chlorine, fluorine, bromine, iodine, lower alkoxy, trifluoromethyl, nitro, or amino, when p is 1:

Y is lower alkoxy, hydroxy, or halogen when p is 2 and X is -O-;

 (R_1) is

-CH,-CH=CH-CH,-

-CH,-C=C-CH,-.

-CH,-CH=CH-CH,-CH,-

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-CH,-CH,-CH=CH-CH,-,

-CH,-C=C-CH,-CH,-, or

-CH,-CH,-C=C-CH,-.

the -CH=CH- bond being cis or trans:

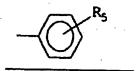
R is hydrogen, lower alkyl, lower alkoxy, hydroxyl, carboxyl, chlorine, fluorine, bromine, iodine, amino, lower mono or dialkylamino, nitro, lower alkyl thio, trifluoromethoxy, cyano, acylamino, trifluoromethyl, trifluoroacetyl, aminocarbonyl, dialkylaminocarbonyl, formyl,

-C(=O)-alkyl, -C(=O)-heteroaryl,

-CH(OR₇)-alkyl, -C(=W)-alkyl, -C(=W)-aryl, or -C(=W)-heteroaryl;

where alkyl is lower alkyl;

aryl is phenyl or



where R_s is hydrogen, lower alkyl, lower alkoxy, hydroxy, chlorine, fluorine, bromine, iodine, lower monoalkylamino, lower dialkylamino, nitro, cyano, trifluoromethyl, trifluoromethoxy;

heteroaryl is



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where O₁ is -O-, -S-, -NH-, or -CH=N-;

W is CH, or CHR, or N-R,;

R, is hydrogen, lower alkyl, or lower alkyl-(C=O)-.

R, is lower alkyl:

Ro is hydroxy, lower alkoxy, or -NHR 10: and

R₁₀ is hydrogen, lower alkyl, C₁-C₃ acyl, aryl,

-C(=O)-aryl, or -C(=O)-heteroaryl,

where aryl and heteroaryl are as defined above; and

m is 1, 2, or 3;

with the exclusion of compounds wherein X is O or S, Y is hydrogen, and R is hydrogen, $C_1-C_4 \text{ alkyl, chlorine, fluorine, bromine, iodine, cyano, } C_1-C_4 \text{ alkoxy, or -COOR}_{21}$ where R_{21} is C_1-C_4 alkyl;

all geometric, optical and stereoisomers thereof, or a pharmaceutically acceptable acid addition salt thereof, and a pharmaceutically acceptable carrier therefor.

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87. (Amended) A pharmaceutical composition, which comprises a compound of the formula

<u>wherein</u>

X is -O-, -S-, -NH-, or -N(R,)

R₂ is selected from the group consisting of lower alkyl, aryl lower alkyl, aryl, (C₃-

C10)cycloalkyl, aroyl, (C2-C11)alkanoyl, and phenylsulfonyl groups;

aryl is defined hereinafter;

p is 1 or 2;

Y is hydrogen, lower alkyl, hydroxy, chlorine, fluorine, bromine, iodine, lower alkoxy, trifluoromethyl, nitro, or amino, when p is 1;

Y is lower alkoxy, hydroxy, or halogen when p is 2 and X is -O-;

 (R_1) is R_{20} or R_{21} in which one or more carbon atoms of R_{20} or R_{21} are substituted by at least one C_1 - C_6 linear alkyl group, phenyl group or

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where Z₁ is lower alkyl, -OH, lower alkoxy, -CF₃, -NO₂, -NH₂ or halogen:

 R_{20} is -(CH₂)_n-, where n is 2, 3, 4 or 5;

 R_{21} is

-CH,-CH=CH-CH,-,

-CH2-C≡C-CH3-,

-CH,-CH=CH-CH,-CH,-

-CH,-CH,-CH=CH-CH,-,

-CH,-C=C-CH,-CH,-, or

-CH,-CH,-C=C-CH,-

the -CH=CH- bond being cis or trans;

R is hydrogen, lower alkyl, lower alkoxy, hydroxyl, carboxyl, chlorine, fluorine, bromine,

jodine, amino, lower mono or dialkylamino, nitro, lower alkyl thio,

trifluoromethoxy, cyano, acylamino, trifluoromethyl, trifluoroacetyl,

aminocarbonyl, monoalkylaminocarbonyl, dialkylaminocarbonyl, formyl,

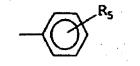
-C(=0)-alkyl, -C(=0)-O-alkyl, -C(=0)-aryl, -C(=0)-heteroaryl,

-CH(OR₇)-alkyl, -C(=W)-alkyl, -C(=W)-aryl, or -C(=W)-heteroaryl;

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where alkyl is lower alkyl;

aryl is phenyl or



where R₅ is hydrogen, lower alkyl, lower alkoxy, hydroxy, chlorine, fluorine, bromine, iodine, lower monoalkylamino, lower dialkylamino, nitro, cyano, trifluoromethyl, trifluoromethoxy;

heteroaryl is



where O₃ is -O-, -S-, -NH-, or -CH=N-;

W is CH, or CHR, or N-R,:

R, is hydrogen, lower alkyl, or lower alkyl-(C=O)-:

R₈ is lower alkyl;

R, is hydroxy, lower alkoxy, or -NHR10; and

R₁₀ is hydrogen, lower alkyl, C₁-C₃ acyl, aryl,

-C(=O)-aryl, or -C(=O)-heteroaryl,

where aryl and heteroaryl are as defined above; and

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m is 1, 2, or 3;

with the exclusion of compounds wherein X is O or S. Y is hydrogen, and R is hydrogen,

C₁-C₂ alkyl, chlorine, fluorine, bromine, iodine, cyano, C₁-C₂ alkoxy, or -COOR₂,

where R₂₁ is C₁-C₄ alkyl;

with the exclusion of compounds wherein X is -S-, R₁ is R₂₀, R is H, and m=1;

all geometric, optical and stereoisomers thereof, or a pharmaceutically acceptable acid

addition salt thereof, and a pharmaceutically acceptable carrier therefor.

88. (Amended) An antipsychotic composition, which comprises a compound of the formula

$$(M_p - N_N - (R_1) - O - N_N$$

wherein

 $X \text{ is -O-, -S-, -NH-, or -N(R_s)}$

R₂ is selected from the group consisting of lower alkyl, aryl lower alkyl, aryl, (C₃-

 C_{10})cycloalkyl, aroyl, (C_2-C_{11}) alkanoyl, and phenylsulfonyl groups;

aryl is defined hereinafter:

p is 1 or 2:

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Y is hydrogen, lower alkyl, hydroxy, chlorine, fluorine, bromine, iodine, lower alkoxy, trifluoromethyl, nitro, or amino, when p is 1;

Y is lower alkoxy, hydroxy, or halogen when p is 2 and X is -O-;

 (R_1) is

-CH₂-CH=CH-CH₂-.

-CH,-CEC-CH,-,

-CH,-CH=CH-CH,-CH,-

-CH,-CH,-CH=CH-CH,-,

-CH,-C=C-CH,-CH,-. or

-CH,-CH,-C = C-CH,-.

the -CH=CH- bond being cis or trans;

R is hydrogen, lower alkyl, lower alkoxy, hydroxyl, carboxyl, chlorine, fluorine,

bromine, iodine, amino, lower mono or dialkylamino, nitro, lower alkyl thio, trifluoromethoxy, cyano, acylamino, trifluoromethyl, trifluoroacetyl, aminocarbonyl, dialkylaminocarbonyl, formyl,

-C(=O)-alkyl, -C(=O)-O-alkyl, -C(=O)-aryl, -C(=O)-heteroaryl,

-CH(OR₇)-alkyl, -C(=W)-alkyl, -C(=W)-aryl, or -C(=W)-heteroaryl;

where alkyl is lower alkyl;

aryl is phenyl or

$$- \bigcirc \stackrel{R_5}{\longrightarrow}$$

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where R₅ is hydrogen, lower alkyl, lower alkoxy, hydroxy, chlorine, fluorine, bromine, iodine, lower monoalkylamino, lower dialkylamino, nitro, cyano, trifluoromethyl, trifluoromethoxy;

heteroaryl is



where O, is -O-, -S-, -NH-, or -CH=N-;

W is CH, or CHR, or N-R.;

R, is hydrogen, lower alkyl, or lower alkyl-(C=O)-:

R, is lower alkyl;

R, is hydroxy, lower alkoxy, or -NHR₁₀; and

R₁₀ is hydrogen, lower alkyl, C₁-C₂ acyl, aryl,

-C(=0)-aryl, or -C(=0)-heteroaryl,

where aryl and heteroaryl are as defined above; and

m is 1, 2, or 3;

with the exclusion of compounds wherein X is O or S, Y is hydrogen, and R is hydrogen,

C₁-C₂ alkyl, chlorine, fluorine, bromine, iodine, cyano, C₁-C₄ alkoxy, or -COOR₂,

where R₂, is C₁-C₂ alkyl;

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all geometric, optical and stereoisomers thereof, or a pharmaceutically acceptable acid

addition salt thereof, in an amount sufficient to produce an antipsychotic effect,

and a pharmaceutically acceptable carrier therefor.

89. (Amended) An antipsychotic composition, which comprises a compound of the formula

wherein

X is -O-, -S-, -NH-, or -N(R,);

R, is selected from the group consisting of lower alkyl, aryl lower alkyl, aryl, (C3-

C10)cycloalkyl, aroyl, (C2-C11)alkanoyl, and phenylsulfonyl groups;

aryl is defined hereinafter,

p is 1 or 2;

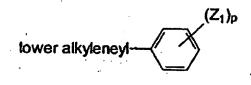
Y is hydrogen, lower alkyl, hydroxy, chlorine, fluorine, bromine, iodine, lower alkoxy, trifluoromethyl, nitro, or amino, when p is 1;

Y is lower alkoxy, hydroxy, or halogen when p is 2 and X is -O-;

(R₁) is R₂₀ or R₂₁ in which one or more carbon atoms of R₂₀ or R₂₁ are substituted by at

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least one C1-C2 linear alkyl group, phenyl group or



where Z₁ is lower alkyl, -OH, lower alkoxy, -CF₁, -NO₂, -NH₂ or halogen;

 R_{20} is -(CH₂)₀-, where n is 2, 3, 4 or 5;

 R_{21} is

-CH₂-CH=CH-CH₂-.

-CH2-C=C-CH2-.

-CH,-CH=CH-CH,-CH,-

-CH,-CH,-CH=CH-CH,-.

-CH2-C=C-CH2-CH2-. OF

-CH,-CH,-C≡C-CH,-,

the -CH=CH- bond being cis or trans;

R is hydrogen, lower alkyl, lower alkoxy, hydroxyl, carboxyl, chlorine, fluorine, bromine,

iodine, amino, lower mono or dialkylamino, nitro, lower alkyl thio,

trifluoromethoxy, cyano, acylamino, trifluoromethyl, trifluoroacetyl,

aminocarbonyl, monoalkylaminocarbonyl, dialkylaminocarbonyl, formyl,

-C(=O)-alkyl, -C(=O)-heteroaryl,

-CH(OR₇)-alkyl, -C(=W)-alkyl, -C(=W)-aryl, or -C(=W)-heteroaryl;

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where alkyl is lower alkyl;

aryl is phenyl or

where R₅ is hydrogen, lower alkyl, lower alkoxy, hydroxy, chlorine, fluorine, bromine, iodine, lower monoalkylamino, lower dialkylamino, nitro, cyano, trifluoromethyl, trifluoromethoxy;

heteroaryl is



where O₁ is -O-, -S-, -NH-, or -CH=N-;

W is CH, or CHR, or N-Ro;

R₇ is hydrogen, lower alkyl, or lower alkyl-(C=O)-:

R, is lower alkyl;

Ro is hydroxy, lower alkoxy, or -NHR10; and

R₁₀ is hydrogen, lower alkyl, C₁-C₁ acyl, aryl,

-C(=O)-aryl, or -C(=O)-heteroaryl,

where aryl and heteroaryl are as defined above; and

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m is 1, 2, or 3;

with the exclusion of compounds wherein X is O or S, Y is hydrogen, and R is hydrogen,

C₁-C₄ alkyl, chlorine, fluorine, bromine, iodine, cyano, C₁-C₄ alkoxy, or -COOR₂,

where R₂, is C₁-C₄ alkyl;

with the exclusion of compounds wherein X is -S-, R₁ is R₂₀, R is H, and m=1;

all geometric, optical and stereoisomers thereof, or a pharmaceutically acceptable acid

addition salt thereof, in an amount sufficient to produce an antipsychotic effect,

and a pharmaceutically acceptable carrier therefor.

- 90. A method of treating psychoses, which comprises administering to a mammal a psychoses-treating effective amount of a composition as claimed in claim 88.
- 91. A method of treating psychoses, which comprises administering to a mammal a psychoses-treating effective amount of a composition as claimed in claim 89.

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92. (Amended) An analgesic composition, which comprises a compound of the formula

$$(N_p - (R_1) - O - (R_1) - O$$

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wherein ·

X is -O-, -S-, -NH-, or -N(R₂);

R, is selected from the group consisting of lower alkyl, aryl lower alkyl, aryl, (C,-

C10)cycloalkyl, aroyl, (C1-C11)alkanoyl, and phenylsulfonyl groups;

aryl is defined hereinafter:

p is 1 or 2;

Y is hydrogen, lower alkyl, hydroxy, chlorine, fluorine, bromine, iodine, lower alkoxy, trifluoromethyl, nitro, or amino, when p is 1;

Y is lower alkoxy, hydroxy, or halogen when p is 2 and X is -O-:

 (R_i) is

-CH,-CH=CH-CH,-.

-CH₂-C=C-CH₂-,

-CH,-CH=CH-CH,-CH,-

-CH,-CH,-CH=CH-CH,-,

-CH2-C≡C-CH2-CH2-, or

-CH,-CH,-C=C-CH,-.

the -CH=CH- bond being cis or trans;

R is hydrogen, lower alkyl, lower alkoxy, hydrox; l, carboxyl, chlorine, fluorine, bromine, iodine, amino, lower mono or dialkylamino, nitro, lower alkyl thio, trifluoromethoxy, cyano, acylamino, trifluoromethyl, trifluoroacetyl, aminocarbonyl, dialkylaminocarbonyl, formyl.

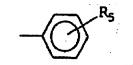
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-C(=O)-alkyl, -C(=O)-neteroaryl, -C(=O)-heteroaryl, -C(=O)-alkyl, -C(=W)-alkyl, -C(=W)-aryl, or -C(=W)-heteroaryl;

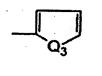
where alkyl is lower alkyl;

aryl is phenyl or



where R, is hydrogen, lower alkyl, lower alkoxy, hydroxy, chlorine, fluorine, bromine, iodine, lower monoalkylamino, lower dialkylamino, nitro, cyano, trifluoromethyl, trifluoromethoxy.

heteroaryl is



where O, is -O-, -S-, -NH-, or -CH=N-;

W is CH, or CHR, or N-R,;

R, is hydrogen, lower alkyl-(C=O)-:

R₈ is lower alkyl:

Ro is hydroxy, lower alkoxy, or -NHR to: and

R₁₀ is hydrogen, lower alkyl, C₁-C₃ acyl, aryl,

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93. (Amended) An analgesic composition, which comprises a compound of the formula

$$(N_p - N_N - (R_1) - O - N_N$$

wherein

X is -O-, -S-, -NH-, or -N(R₂):

R, is selected from the group consisting of lower alkyl, aryl lower alkyl, aryl, (C,-

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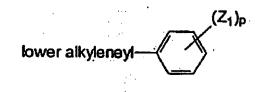
 C_{10})cycloalkyl, aroyl, (C_2-C_{11}) alkanoyl, and phenylsulfonyl groups; aryl is defined hereinafter;

p is 1 or 2;

Y is hydrogen, lower alkyl, hydroxy, chlorine, fluorine, bromine, iodine, lower alkoxy, trifluoromethyl, nitro, or amino, when p is 1:

Y is lower alkoxy, hydroxy, or halogen when p is 2 and X is -O-;

(R₁) is R₂₀ or R₂₁ in which one or more carbon atoms of R₂₀ or R₂₁ are substituted by at least one C₁-C₆ linear alkyl group, phenyl group or



where Z₁ is lower alkyl, -OH, lower alkoxy, -CF₃, -NO₂, -NH₂ or halogen;

R₂₀ is -(CH₂)₀-, where n is 2, 3, 4 or 5:

R21 is

-CH,-CH=CH-CH,-,

-CH2-C=C-CH2-.

-CH,-CH=CH-CH,-CH,-.

-CH-CH-CH-CH-CH--

-CH2-C=C-CH2-CH3-, or

-CH,-CH,-C≡C-CH,-

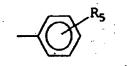
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the -CH=CH- bond being cis or trans;

R is hydrogen, lower alkyl, lower alkoxy, hydroxyl, carboxyl, chlorine, fluorine, bromine, iodine, amino, lower mono or dialkylamino, nitro, lower alkyl thio, trifluoromethoxy, cyano, acylamino, trifluoromethyl, trifluoroacetyl, aminocarbonyl, monoalkylaminocarbonyl, dialkylaminocarbonyl, formyl, -C(=O)-alkyl, -C(=O)-O-alkyl, -C(=O)-aryl, -C(=O)-heteroaryl, -CH(OR₇)-alkyl, -C(=W)-alkyl, -C(=W)-aryl, or -C(=W)-heteroaryl;

where alkyl is lower alkyl;

aryl is phenyl or



where R₅ is hydrogen, lower alkyl, lower alkoxy, hydroxy, chlorine, fluorine, bromine, iodine, lower monoalkylamino, lower dialkylamino, nitro, cyano, trifluoromethyl, trifluoromethoxy;

heteroaryl is



where O₁ is -O₂ -S₂ -NH₂ or -CH=N₂:

W is CH, or CHR, or N-R.;

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R₇ is hydrogen, lower alkyl, or acyl:

R. is lower alkyl;

Ro is hydroxy, lower alkoxy, or -NHR 10; and

R₁₀ is hydrogen, lower alkyl, C₁-C₁ acyl, aryl,

-C(=O)-aryl, or -C(=O)-heteroaryl,

where aryl and heteroaryl are as defined above; and

m is 1, 2, or 3;

with the exclusion of compounds wherein X is O or S, Y is hydrogen, and R is hydrogen,

C₁-C₄ alkyl, chlorine, fluorine, bromine, iodine, cyano, C₁-C₄ alkoxy, or -COOR₃

where R₃₁ is C₁-C₄ alkyl;

with the exclusion of compounds wherein X is -S-, R₁ is R₂₀, R is H, and m=1;

all geometric, optical and stereoisomers thereof, or a pharmaceutically acceptable acid

addition salt thereof, in an amount sufficient to produce a pain-relieving effect,

and a pharmaceutically acceptable carrier therefor.

- 94. A method of alleviating pain, which comprises administering to a mammal a painrelieving effective amount of a composition as claimed in claim 92.
- 95. A method of alleviating pain, which comprises administering to a mammal a painrelieving effective amount of a composition as claimed in claim 93.

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96. (Amended) A compound of the formula

$$M_p = M_{X^{-N}} = M_{X^{-N}}$$

wherein

X is $-O_{-}, -S_{-}, -NH_{-}, or -N(R_2)$;

R, is selected from the group consisting of lower alkyl, aryl lower alkyl, aryl, (C₃-C₁₀)cycloalkyl, aroyl, (C₂-C₁₁)alkanoyl, and phenylsulfonyl groups; aryl is as defined hereinafter.

p is 1 or 2;

Y is hydrogen, lower alkyl, hydroxy, chlorine, fluorine, bromine, iodine, lower alkoxy, trifluoromethyl, nitro, or amino, when p is 1;

Y is lower alkoxy, hydroxy, or halogen when p is 2 and X is -O-;

n is 2, 3, 4 or 5;

R is hydrogen, lower alkyl, lower alkoxy, hydroxyl, carboxyl, chlorine, fluorine, bromine, iodine, amino, lower mono or dialkylamino, nitro, lower alkyl thio, trifluoromethoxy, cyano, acylamino, trifluoromethyl, trifluoroacetyl, aminocarbonyl, dialkylaminocarbonyl, formyl, -C(=O)-alkyl, -C(=O)-O-alkyl.

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-C(=O)-aryl, -C(=O)-heteroaryl, or -CH(OR₁)-alkyl; -C(=W)-alkyl, -C(=W)-aryl, or -C(=W)-heteroaryl;

alkyl is lower alkyl:

aryl is phenyl or

$$R_5$$

where R₅ is hydrogen, lower alkyl, lower alkoxy, hydroxy, chlorine, fluorine, bromine, iodine, lower monoalkylamino, lower dialkylamino, nitro, cyano, trifluoromethyl, or trifluoromethoxy;

heteroaryl is



Q, is -O-, -S-, -NH-, or -CH=N-;

W is CH2 or CHR, or N-R2;

R, is hydrogen, lower alkyl, or lower alkyl-(C=O)-:

Re is lower alkyl:

Ro is hydroxy, lower alkoxy, or -NHR 10; and

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R₁₀ is hydrogen, lower alkyl, C₁-C₃ acyl, aryl,
-C(=0)-aryl or -C(=0)-heteroaryl,

where aryl and heteroaryl are as defined above; and

m is 1, 2, or 3;

with the proviso that at least one R is selected from the group consisting of

dialkylaminocarbonyl, formyl, -C(=W)-alkyl, -C(=W)-aryl, and

-C(=W)-heteroaryl;

with the exclusion of compounds wherein X is O or S, Y is hydrogen, and R is hydrogen,

C₁-C₄ alkyl, chlorine, fluorine, bromine, iodine, cyano, C₁-C₄ alkoxy, or -COOR₂₃

where R₂₃ is C₁-C₄ alkyl;

with the exclusion of compounds wherein X is -S-, R is H, and m=1;

- all geometric, optical and stereoisomers thereof, or a pharmaceutically acceptable acid addition salt thereof.
 - 97. A compound as claimed in claim 96, wherein X is -O-, -S-, or -NH-.
- 98. A compound as claimed in claim 96, wherein Y is hydrogen, chlorine, bromine, or fluorine.
 - 99. A compound as claimed in claim 96, wherein n is 2, 3, or 4.

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- 100. A compound as claimed in claim 96, wherein X is -O-.
- 101. A compound as claimed in claim 96, wherein X is -S-.
- 102. A compound as claimed in claim 96, wherein X is -NH-.
- 103. A compound as claimed in claim 96, wherein X is -N(R₂).
- 104. (Amended) A compound as claimed in claim 96, wherein X is -O-, -S-, or -NH-: Y is H, Cl, F, or -CF₃: R is selected from the group consisting of hydrogen. C₁-C₃ alkyl, C₁-C₃ alkoxy, -OH, Cl, F, Br, I, C₁-C₃ monoalkylamino, acylamino, -NO₂, -OCF₃, or -CF₃: and n is 2, 3, or 4.
- 105. A compound as claimed in claim 104, wherein the substituent Y is in the 5- or 6-position.
 - 106. A compound as claimed in claim 105, wherein m is 2.
 - 107. A compound as claimed in claim 105, wherein n is 3.
 - 108. A compound as claimed in claim 105, wherein p is 1.

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109. A pharmaceutical composition, which comprises a compound as claimed in claim 96, and a pharmaceutically acceptable carrier therefor.

- 110. An antipsychotic composition which comprises a compound as claimed in claim

 96, in an amount sufficient to produce an antipsychotic effect, and a pharmaceutically acceptable

 carrier therefor.
- 111. A method of treating psychoses, which comprises administering to a mammal a psychoses-treating effective amount of a compound as claimed in claim 96.
- 112. An analgesic composition which comprises a compound as claimed in claim 96, in an amount sufficient to produce a pain-relieving effect, and a pharmaceutically acceptable carrier therefor.
- 113. A method of alleviating pain, which comprises administering to a mammal a pain-relieving effective amount of a compound as claimed in claim 96.
- 114. The compound of claim 96, wherein said pharmaceutically acceptable acid addition salt is selected from the group consisting of salts of mineral acids, salts of monobasic carboxylic acids, salts of dibasic carboxylic acids, and salts of tribasic carboxylic acids.

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addition salt is selected from the group consisting of salts of hydrochloric acid, sulfuric acid, nitric acid, acetic acid, propionic acid, maleic acid, fumaric acid, carboxysuccinic acid, and citric acid,

P.S.